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HOME ECONOMICS.

ALICE P. NORTON.

OUTLINE OF WORK FOR READING AND DISCUSSION.

(CONTINUED FROM NOVEMBER.)

V. Composition of foods. (1) Upon what foods are we to depend for our chief supply of the different food principles? (2) Percentage composition of some common foods: milk, eggs, meat, bread, etc.

VI. Further study of food principles. (1) Albumen, as a typical proteid: (*a*) composition; (*b*) tests; (*c*) cooking temperature, and effect of different degrees of heat. (2) Carbohydrates: (*a*) composition; (*b*) classification (see COURSE OF STUDY, Vol. I, No. 4); (*c*) cooking temperature. (3) Fat: (*a*) source and composition; (*b*) comparison of animal and vegetable fats; (*c*) effect of cooking upon digestibility.

VII. Digestion of foods. (1) Organs of digestion and their adaptation to their functions. (2) Processes of digestion and changes in food.

VIII. Outline for study of special foods: fruits, cereals, bread, milk, eggs, meat. (Some of these outlines, as worked out in the class, are given below.)

EXPERIMENTS.

VI. Fill a test tube to about one-third of its capacity with white of egg, and immerse in a beaker of water. Suspend a thermometer in the test tube, and heat the water slowly to boiling. Note all the changes in the albumen and the temperature at which they occur. Examine the egg after the water has been boiling a few minutes.

VII. Cut the white of an egg with scissors, dilute it with ten times its amount of water, shaking it thoroughly, and filter it. Heat in a test tube some of the filtrate.

To show the presence of albumen in meat or fish, heat the water in which a small piece of either has been soaking for a few minutes, and note the coagulation.

VIII. To about 5^{cc} of dilute white of egg in a test tube add a few drops of nitric acid, and heat. Cool, and add a few drops of ammonia.

Test meat, flour, and several other food materials for proteid in the same way.

IX. Examine, under the microscope, the starch obtained in experiments III and IV. Stain a portion of each with iodine.

X. Mix one-half a teaspoonful of cornstarch with half a tumbler of water and let it stand. Mix the same amount of cornstarch and water in a beaker and heat to 140° F., and let stand a few hours. Use the same amounts of cornstarch and water, and boil. Examine a portion of each under the microscope.

XI. Place in a test tube 5 ^{cc} of a weak solution of copper sulphate, and introduce a small amount of glucose. Add strong caustic potash solution till the precipitate, which at first forms, dissolves. Heat to boiling. Compare the result with that obtained by heating copper sulphate and caustic potash without the glucose.

XII. Heat carefully, in an evaporoting dish, about five grams of cornstarch, stirring constantly. After heating about ten minutes, add water, and boil. Filter the mixture, and to a small portion of the filtrate add twice its bulk of alcohol. The precipitate is dextrin. To the remainder of the filtrate add 1^{cc} of hydrochloric acid and boil until a drop of the liquid taken out gives no color with iodine. Neutralize with sodium carbonate and test for sugar.

XIII. Make a thin starch paste (boiled). To it add saliva, and after allowing it to stand for a few minutes, test the mixture for sugar.

The following outlines for the study of special foods were suggested by the class as covering the points which one would take up in teaching grade classes. It was recognized that the logical order here given would frequently not be the pedagogical, but that the latter would vary with the class to be taught. As a rule, the place to begin would be with the actual cookery of the food.

FRUITS.

I. Definition. (1) Technical. (2) Special use of term.

II. Relation of the fruit to the life of the plant.

III. Kinds.

IV. Geographical distribution. (1) Tropical and temperate. (2) Areas of production. States, countries.

V. Fruit industries. (1) Cultivation: (*a*) position of orchard; (*b*) soil; (*c*) climate. (2) Drying. (3) Canning and preserving. (4) Wine-making, etc.

VI. Commercial value.

VII. Storage and transportation.

VIII. Cookery. (1) Stewing: (*a*) fresh fruits; (*b*) dried fruits. (2) Canning. (3) Jelly-making. (4) Preserving and pickling.

IX. Food value and digestibility.

REFERENCES: Bergen's *Botany; Report of Department of Agriculture*, 1900; "Fruit Industry in California," *Popular Science Monthly*, Vol. XLIV, p. 200; "Fruit as Food and Medicine," *ibid.*, Vol. XLVII, p. 677; "The Dried-Fruit Industry of California," *American Kitchen Magazine*, December, 1901; Bailey, *Principles of Fruit Growing*.

CEREALS.

I. Introduction. (1) Origin of name. (2) Family.

II. Kinds.

III. Geographical distribution. (1) Original home. (2) Present areas of growth.

IV. Cultivation: soil, climate, etc.

V. Preparation for food. (1) Primitive methods. (2) Present methods: (*a*) threshing, etc.; (*b*) milling.

VI. Storage and transportation.

VII. Commercial value.

VIII. Special study of wheat. (1) Structure of plant. (2) Structure of grain. (2) Comparison with other cereals.

IX. Experiments to separate from flour: (1) starch, (2) gluten.

X. Cookery.

XI. Food value.

REFERENCES: Chase and Clow, *Stories of Industry;* Sargent, *Corn Plants;* Pratt, *Fairyland of Flowers* (for story of Ceres); Baldwin, *Old Greek Stories; The Great World's Farm;* "Breeding New Wheats," *World's Work,* May, 1901; *American Kitchen Magazine,* December, 1900; September, 1901; *Monograph on American Social Economics,* No. 3.

MANUAL TRAINING.

IRA M. CARLEY.

THE working-drawings, Figs. 1 and 2, are of a small oak table which was made (and planned, to a considerable extent) by a boy of the eighth grade. It is reproduced here, partly because it proved, when completed, to be of quite pleasing design, and partly to show how largely mathematics enters into even very simple problems in construction.

The first step in making the plan was the free-hand sketch. This was worked over and changed until it appeared satisfactory in proportions and construction. The next step was to decide on the scale for the working-drawing. It was decided to make the drawing one-fourth actual size. All the main dimensions were then reduced to this scale. In this particular case this involved, of course, only very simple operations in fractions.

The number of planes of projection necessary, or the number of "views" to be shown, was found to be two, namely, the "plan" and an elevation. After the circle representing the outline of the plan had been drawn, the next problem was to divide it into three equal parts, to locate the centers of the legs.

This might have been done, of course, by using a 30° drawing triangle on the T-square, but it was not suggested by anyone, so the value in degrees of one-third the circle was taken. Then the construction of an angle of 120° at the center of the circle was seen to be required.